



Federal Aviation Administration
Alaskan Region

Capstone Program Management Office
801 B Street, Suite 300
Anchorage Alaska 99501

Capstone Quarterly Report

3rd Quarter FY01

April – June 2001



Capstone To Date

Executive Summary

This last quarter for the Capstone Program has seen some major milestones completed and new inroads made on some on-going and wide-ranging concerns. We continue to express the virtues and “value-added” services that Capstone provides to the Alaska aviation community through numerous meetings and briefings. Even as busy as we’ve been, we’ve stopped and took the time to recognize individuals for their exemplary services to the “Program”. We remain dedicated to complete Phase 1 with at least 150 aircraft equipped and all identified GBT sites installed and certified.

April

- A special Capstone-sponsored awards ceremony was held April 12 in Washington, D.C., to recognize all those who contributed to initiation of ADS-B radar-like services on January 1, 2001. FAA Administrator Jane Garvey attended the celebration and received a plaque from Tom Wardleigh, Alaskan Aviation Coordination Council, in recognition of her commitment to improving aviation safety through industry partnership. Pat Poe, Alaskan Regional Administrator, and John Hallinan, Capstone Program Manager presented plaques to Steve Brown, ATS-1, Tom McSweeney, AVR-1 (accepted by Peggy Gilligan), Steve Zaidman, ARA-1, Chris Hart, ASY-1, and Ruth Leverenz, ARC-1 (accepted by Tracy Paquin), in appreciation of their support during the past year. Plaques were also presented to NATCA and PASS

leadership, recognizing the many contributions of their members.

- Following his listening session in Anchorage on Friday, April 27, Steve Brown, Associate Administrator for Air Traffic Services, presented special Capstone plaques to Managers of the Alaskan Region’s Air Traffic and Airway Facilities Divisions and the NAS Implementation Center. The plaques were to thank employees and contractor personnel who contributed to initiation of ADS-B radar-like services on January 1, 2001.
- A ground based transceiver (GBT) was installed and tested at Aniak on April 28. This developmental equipment will remain on for data collection purposes, however a commissioning date for actual operation use has yet to be determined
- An aircraft hangar in Bethel, approximately 60’ x 60’, was leased by the Capstone Program Office for the purpose of providing local contract avionics installations. This will allow for Bethel-based aircraft to have Capstone avionics installed with minimal downtime and inconvenience to the operator.
- As of April 30th, there were 93 Capstone avionics suites currently installed and 14 installations underway.

May

- Hardware, software and cable upgrades were completed on the

Anchorage ARTCC's MEARTS in May for the LAN capability expansion project under the terms of the NATCA memorandum of agreement (MOU).

- The GBT installation at St. Mary's was completed on May 22. There are now five GBT sites including Bethel, Cape Newenham, Cape Romanzof, and Aniak. There are six remaining sites scheduled for installation; Dillingham, King Salmon, Unalakleet, Sparrevohn, Tatalina, and Site Summit.
- As of May 31st, there were 99 Capstone avionics suites currently installed and 9 installations underway.

June

- The Request for Proposal (RFP) for the Capstone Phase II avionics has been completed and will be issued for vendor consideration in early July.
- Tom Benenson, an aviation reporter for FLYING magazine visited the week of the 18th to learn about the Capstone Program. He also attended the American Association of Airport Executives (AAAE) conference and traveled to Bethel to observe operations in a Capstone equipped aircraft and interview participating pilots and operators.
- A draft Memorandum of Agreement (MOA) annex between Capstone and NASA for incorporation of Synthetic Vision capability in the Capstone Phase II avionics package was developed. This is the first

annex under the broad, multi-year umbrella MOA. This agreement is overseen by the FAA-AND organization and reviewed by the FAA and NASA-Langley to facilitate aviation projects of joint interest as they develop.

- A team from the NASA Small Aircraft Transportation Systems (SATS) Program began arriving in Alaska on June 24 to observe the Capstone Program. With the team were Pete McHugh, FAA SATS Manager, Mike Durham, NASA SATS Program Manager, Ken Goodrich, Flight Deck Technologies Lead, Jim Burley, SATS Technology Integration & Demonstration Lead, Doug Arbuckle, Head of Airborne Systems, and Ken Jones, NASA. The purpose of the trip was to compare and build upon common interests for ongoing and future program developments
- On June 15th, a Request for Offers, Solicitation No.DTFA04-01-R-20140, for avionics installation services in Bethel, Alaska, was let. The purpose for this service was for the rapid and convenient Capstone equippage of aircraft based in this area.
- As of June 30th, there were 104 Capstone avionics suites installed and 9 installations underway.

Briefings

Capstone personnel provide numerous briefings and avionics demonstrations monthly. The following highlight some of these events:

- Gerald Lavey, the Administrator's Chief of Staff and author of AOA-VOICE, her weekly highlights report, was provided a Capstone briefing on April 26. Later that day, Gerald, Melvin Harris, and Steve James, Great Britain's liaison to FAA, took a local demonstration flight with pilot Ron Haney in the University of Alaska, Anchorage's C-180 to observe the Capstone multifunction display and terrain database in use. Jerry was in Anchorage to conduct listening sessions at the Anchorage FSDO-3 and at the Anchorage Museum with Steve Brown.
- The Capstone Program was briefed during the Airports Division planning workshops in Fairbanks on May 10 and in Anchorage on May 14. A briefing package was also provided for the Division's use in Juneau on May 16. Airport managers, planners, engineers, and engineering consultants attended these meetings along with Brad Kearse, the manager of FAA programs at NOAA. The primary message to these Airports personnel is that they should anticipate GPS stand-alone non-precision approach procedures, with the associated airspace, at most village airports. This will significantly improve emergency access during hours of darkness and poor weather. Necessary airport facilities such as weather equipment and runway lighting should be planned and implemented. The concept of ADS-B position reporting for snow removal vehicles and maintenance trucks was also introduced. At the air carrier hub airports, accurate, GPS surveys will be needed to fully utilize ADS-B and moving map capabilities.
- A Capstone Phase I/II briefing to the Wide Area Augmentation System (WAAS) Independent Review Board (IRB) at Raytheon headquarters in Fullerton, California, was given on May 18, 2001. The concept to utilize the L-NAV portion of WAAS to support lower routes in Southeast Alaska was emphasized. After the meeting, the coordinator requested that a Capstone representative attend future meetings to help maintain a positive flow of information.
- On Friday, June 8, FAA representatives (Brian Throop ATP-130, Bill McGovern Gulf IPT Lead from AND-450, Kristen Burnham Investment Analysis Lead from ASD-400, Bruce Thorson Co-Chairman of the Gulf Working Group from SW Region, and Thomas Calow, Senior Systems Engineer for Jerry Thompson & Associates, Inc. for the FAA Gulf of Mexico program) visited Alaska to see Capstone and ADS-B in action. Capstone provided a program briefing and discussed similarities between GoMex and Alaska aviation (e.g., lack of radar, communications, and other ground-based infrastructure). The Gulf representatives were also provided a tour of Anchorage ARTCC, including live operations using ADS-B and technical discussions with Airway

Facilities, a demonstration of Capstone avionics was provided by the University of Alaska and a familiarization trip to Bethel was made on Saturday.

- In April, Steve Wallace, Director of the FAA Accident Investigation Office, was provided a Capstone briefing and a demonstration flight in the UAA C-180 aircraft.
- Mr. Gerhard Fischer, Operations Manager, and Mr. Johannes Prinz, Research Engineer, from Frequentis, an international aviation radio manufacturer and datalink service provider based in Vienna, Austria, were briefed on the Capstone program. Their primary interest is in the Universal Access Transceiver (UAT) datalink radio applications within Capstone. They reported that the VDL-4 datalink testing and demonstrations in Europe have not progressed as well as the UAT in Alaska.
- On Monday, June 25, John Hallinan, Capstone Program Manager, briefed the American Association of Airport Executives (AAAE) and other attendees at the Technology Applications for Airports Conference at the University of Alaska Anchorage Aviation Technology Center on Merrill Field. Other FAA speakers included Pat Poe, Alaskan Regional Administrator, Carl McCullough, Director of Communications, Navigation, and Surveillance, Steve Creamer, Deputy Air Traffic Division Manager, Don Willis, Spectrum Planning and International Division Manager,

Roger Motzko, Regional Runway Safety Program Manager.

Meetings

Besides the routine and reoccurring meetings and telecons held by the Capstone Program Office, the following highlight several of those worthy of note:

- RTCA committee representatives met in Salem, Oregon during April to continue work on Minimum Operational Performance Specifications (MOPS) for the UAT. Chris Moody, Mitre CAASD, reported the preferred frequency seems to be 978 or 979 MHz since there are no Distance Measuring Equipment assigned to these frequencies in the U.S. although they are used for low power DME avionics testing. There are 5 DME's in Europe that operate on 978 MHz and 9 are planned for 979 MHz. UAT is the datalink system currently utilized in the Capstone system. The draft MOPS is expected to be published in February 2002. Once the final MOPS is published and spectrum becomes available, avionics manufacturers can begin producing the datalink equipment for sale to the public.
- The Capstone Program Office participated in a telephone conference on May 24 with Ken Leonard, AND-501, Jim Hebert, Susan Hedenberg, AND-530, and Dr. Michael Basehore at NASA Langley and several NASA personnel to discuss a potential interagency MOA. Dr. Basehore had prepared a draft MOA instrument,

with input from NASA, as a starting point for discussions.

- Capstone representatives Gary Childers and Sky Tudor met with managers from the WAAS IPT, AIR-130, AFS-400, MITRE, Raytheon, SF-21, and the Rotorcraft Directorate in Headquarters on May 31. The meeting covered Capstone WAAS requirements, WAAS IPT updates, MITRE WAAS coverage analysis, Raytheon WAAS delivery schedule updates. AFS and AIR roles were also outlined during the WAAS delivery process. Follow-up meetings are planned to address the possibility of early delivery of certain WAAS components.
- A Capstone meeting in Bethel was held on June 20. Discussed were local aviation concerns as well as updates regarding the Capstone program including the status of local avionics installations.
- To continue discussions regarding the potential early use of the L-NAV portion of the Wide Area Augmentation System (WAAS) during Capstone's phase II in Southeast Alaska, John Hallinan met in FAA headquarters on June 29 with Tom McSweeney, Associate Administrator for Regulation and Certification.

Watch Items

- Spectrum: A proposed MOA between the DOT/FAA and DOD will define and clarify the way the two organizations will cooperate in the future regarding coexistence in the ARNS band. Although we still need

to make some changes and coordinate this MOA with our constituencies, the fact that there is a general consensus and that we can support this proposal is a tremendous step forward. It is clear that there still is some serious issues to be reviewed and settled, including cost and technical issues, but we are moving in a cooperative way to deal with the concerns of both parties. The MOA is to be signed by the Secretary of Transportation and the Secretary of Defense.

Table of Contents

Table of Contents	1
<i>Capstone</i> Timeline	2
Spending Plan for FY01 F&E Funding as of August 20th, 2001	3
Capstone Phase 1 Status of Program Elements.....	4
Program Elements.....	6
1. Aircraft Equipment Package	6
2. Obtain and Install Ground Infrastructure to Support ADS-B	9
3. Micro-EARTS Adaptation	12
4. Coordinate/Obtain/Implement Flight Information Services (FIS).....	14
5. Train Capstone Participants	15
6. Obtain and Install Automated Weather Equipment	16
7. Conduct Safety and Human Factors Study	17

Capstone Timeline

ID	Task Name	Start	Finish	1st Quarter			3rd Quarter			1st Quarter			3rd Quarter			1st Quarter		
				Jan	Mar	May	Jul	Sep	Nov	Jan	Mar	May	Jul	Sep	Nov	Jan	Mar	May
1	Finsh Bethel/Y-K Delta	1/1/00	1/1/03															
2	Avionics Installations	2/27/01	10/31/01															
3	GBT Installations	6/19/00	5/1/02															
4	EHM GBT Installation	1/16/01	5/1/02															
5	CZF GBT Installation	2/6/01	4/20/01															
6	ANI GBT Installation	6/19/00	7/23/01															
7	KSM GBT Installation	6/19/00	8/15/01															
8	DLG GBT Installation	2/15/01	5/1/01															
9	AKN GBT Installation	2/15/01	3/19/01															
10	SUMMIT GBT Installation	2/15/01	3/19/01															
11	UNK GBT Installation	3/5/01	4/4/01															
12	SVW GBT Installation	3/5/01	4/6/01															
13	TLJ GBT Installation	3/5/01	4/5/01															
14	Site Summit (Anchorage)	1/1/01	2/1/01															
15	ZAN/Capstone Architecture Upgrade	1/1/01	1/31/02															
16	MEARTS upgrades	5/31/01	1/31/02															
17	ORD/Commissioning of ADS-B Service	1/1/01	1/23/02															
18	Information Services and Dispatch Flight Monitoring	8/18/00	1/1/03															
19	FIS-B	8/18/00	3/25/02															
20	Dispatch Flight Monitoring	1/1/01	1/31/02															
21	TIS-B	1/1/02	1/1/03															
22	Bethel Special VFR Improved Operations	1/1/01	12/31/01															
23	Bethel Tower Display	1/1/01	12/31/01															
24	Sector 13 Hi/Low Resectorization	1/1/01	9/10/01															
25	AWOS III Commissioning/JAI	6/27/01	7/20/01															
26	Platinum	6/27/01	6/27/01															

Spending Plan for FY01 F&E Funding as of August 20th, 2001

Spend Plan	1Q 01	2Q 01	3Q 01	4Q 01	1Q 02	2Q 02	3Q 02	4Q 02	Totals
Avionics		\$.4M	\$.6M						\$1.00M
Ground		\$M	\$.5M						\$.5M
Cert Proced		\$.36M	\$.61M						\$.97M
FIS/TIS/GPS		\$.46M	\$.0M						\$.46M
MISC/SPO		\$.70M	\$1.01M						\$1.71M
AWOS		\$.17M	\$.1M						\$.27M
MITRE	.5M								\$.50M
Totals	.5M	\$2.09M	\$2.82M						\$5.41M
Travel	\$53K	\$52K	\$66K						\$1.71M

Capstone Spend Plan:

- a. 1Q 01: \$500K to fund 2 manyears of work from MITRE
- b. 2Q 01: \$400K for engineering support and avionics spares. \$360K for MEARTS modification. \$460K for MEARTS modification. \$700K for contract support and program office operation.. \$170K for AWOS at Hoonah and commissioning 7 AWOS in Y-K delta.
- c. 3Q 01: \$600K for avionics installations and modifications. \$.5M for ground stations and communications improvement. \$1M to purchase contract support and program office expense. \$100K for AWOS at Hoonah.

Capstone Phase 1 Status of Program Elements

Element 1. Aircraft Equipment Package

A. Coordinate and complete a Request For Information (RFI).	Completed
B. Coordinate and complete a Request For Offer (RFO).	Completed
C. Down select prospective vendor	Completed
D. Initial operational capability demonstration	Completed
E. Contract awarded	Completed
F. Install equipment	In Progress

Element 2. Obtain and Install Ground Infrastructure to Support ADS-B

A. Coordinate and complete a Request For Information (RFI).	Completed
B. Coordinate and evaluate purchase of a Mitre Ground Station.	Cancelled
C. Coordinate and complete a Request for Offer (RFO).	Completed
D. Down select prospective vendor	Completed
E. Initial operational capability demonstration	Completed
F. Contract awarded	Completed
G. Install Ground Stations	In Progress

Element 3. Micro-EARTS Adaptation

A. Procure modification to Micro-EARTS.	Completed
B. Conduct BETA Demo	Completed
C. Conduct design reviews	Completed
D. Certification	In Progress

Element 4. Coordinate/Obtain/Implement Flight Information Services (FIS)

- | | |
|-----------------------------------|-----------|
| A. National contractor selection. | Completed |
| B. Select contractor | Completed |

Element 5. Train Capstone Participants

- | | |
|--------------------------------|-------------|
| A. Complete statement of work. | Completed |
| B. Issue contract | Completed |
| C. Conduct Training | In Progress |

Element 6. Obtain and Install Automated Weather Equipment

- | | |
|--|-------------|
| A. Select prospective sites | Completed |
| B. Perform site surveys | Completed |
| C. Procure the automated weather equipment | Completed |
| D. Install automated weather equipment | In Progress |

Element 7 Conduct Safety and Human Factors Study

- | | |
|--------------------------------|-------------|
| A. Complete statement of work. | Completed |
| B. Issue contract | Completed |
| C. Conduct Study | In Progress |

Program Elements

1. Aircraft Equipment Package

Objective	Purpose
<p>To equip up to 150 aircraft used by the commercial operators in the Yukon-Kuskokwim delta region of Alaska with a government-furnished Global Positioning System (GPS) based avionics package.</p>	<p>A significant number of mid-air collisions, controlled flight into terrain incidents, and weather-related accidents can be avoided with new technologies incorporated into the Capstone avionics package. The Alaskan Region's "Capstone Program" is an accelerated effort to improve aviation safety and efficiency through installation of government-furnished Global Positioning System (GPS)-based avionics and data link communications suites in most commercial aircraft serving the Yukon-Kuskokwim delta area. Capstone-equipped aircraft will be used initially to validate three of the nine high priority Free Flight Operational Enhancements requested by RTCA.</p> <ul style="list-style-type: none"> • Flight Information Services (FIS) • Cost Effective Controlled Flight Into Terrain (CFIT) Avoidance • Enhanced See and Avoid <p>The Capstone program will provide real world information and experience that will provide enhanced safety and operational capabilities.</p>
<p style="text-align: center;">Progress/Outcomes</p> <p>A. Coordinate and complete a Request For Information (RFI). <u>1st Quarter FY99 - Completed</u></p> <p>The Alaskan Region's Logistics Division published in the Commerce Business Daily a "Request for Information (RFI)." The RFI publicly announced to interested avionics vendors the FAA's proposed Capstone Program and requested submission of information on their products, services, and capabilities which are currently available, to meet the needs for the Capstone program. Information provided by the five vendors who responded will be considered as the FAA prepares performance specifications for Capstone Program avionics and ground transceiver equipment.</p>	

Aircraft Equipment Package-cont.

.Progress/Outcomes - cont.

B. Coordinate and complete a Request for Offer (RFO). 2nd Quarter FY99 - Completed

The Alaskan Region's Logistics Division completed the RFO. The announcement was made on the internet March 22, 1999. The RFO will close April 26, 1999. The Request for Proposals (RFP) for avionics suites will be published in hard copy controlled by the Logistics Division. Standard performance specifications common to the avionics industry are being utilized.

C. Down select prospective vendor. 3rd Quarter FY99: - Completed

The Avionics RFO closed April 26, 1999. UPS Aviation Technologies (formerly II Morrow, Inc), an Oregon based subsidiary of United Parcel Service was down selected. UPS AT will be required to produce at least two sets of installed avionics (in aircraft provided by UPS AT), a ground station, and related software to demonstrate operation of the proposed avionics system, in flight, at Bethel, Alaska in August 1999. Following a successful flight demonstration, a production contract will be awarded. The number of avionics suites purchased, up to a maximum of 200, will be based on the total available budget of \$4 million. It is anticipated approximately 150 units will actually be procured.

D. Conduct Initial operational capability demonstration. 4th Quarter FY99 - Completed

An initial operational capability demonstration was completed on August 25, 1999. UPS AT, using a company-owned Beechcraft King Air airplane and a specially equipped Cessna Model 208 Caravan furnished by PenAir, UPS AT, demonstrated that its proposed Global Positioning System (GPS) navigation unit, multi-function cockpit display (MFD), and datalink radio system would meet FAA performance specifications for the Capstone Program.

Aircraft Equipment Package – cont.

Progress/Outcomes - cont.

E. Award Contract. **4th Quarter FY99 - Completed**

A determination was made that FAA specifications were met and a contract was awarded on September 13th, 1999. The contract was for Capstone avionics systems, installation kits, terrain databases, ground-based transceivers, an avionics training simulator and training assistance.

F. Install Equipment. **3rd Quarter FY01 – In Progress**

One Hundred-four (104) aircraft have been installed with Capstone avionics suites with 9 installations in-progress. A Solicitation No. DTFA04-01-R-20140 for avionics installs in Bethel, Alaska was issued on 6/15/01.

2. Obtain and Install Ground Infrastructure to Support ADS-B

Objective	Purpose
To install ADS-B ground stations at up to twelve (12) locations in the Yukon-Kuskokwim delta region of Alaska	To provide enhanced see and avoid information each ADS-B equipped aircraft broadcasts its precise position in space via a digital datalink along with other data, including airspeed, altitude and whether the aircraft is turning, climbing or descending. This provides other aircraft, as well as ground facilities that have ADS-B equipment a much more accurate depiction of air traffic than radar can provide. To provide the digital datalink capability in a cost-effective manner requires the installation of ground based transceivers.
<p style="text-align: center;">Progress/Outcomes</p> <p>A. Coordinate and complete a Request For Information (RFI). <u>1st Quarter FY99 - Completed</u></p> <p>The Alaskan Region's Logistics Division published in the Commerce Business Daily a "Request for Information (RFI)." The RFI publicly announced to interested avionics vendors the FAA's proposed Capstone Program and requested submission of information on their products, services, and capabilities which are currently available, to meet the needs for the Capstone program. Information provided by the five vendors who responded will be considered as the FAA prepares performance specifications for Capstone Program avionics and ground transceiver equipment.</p> <p>B. Coordinate and evaluate purchase of a Mitre Ground Station. <u>4th Quarter FY99 - Cancelled</u></p> <p>The purchase of the Mitre ground station has been cancelled. The proposed vendor ground station and datalink infrastructure does not require an additional Mitre ground station.</p>	

Obtain and Install Ground Infrastructure to Support ADS-B – cont.

Progress/Outcomes - cont.

C. Coordinate and complete a Request for Offer (RFO) for ground stations. 2nd Quarter FY99 - Completed

The Alaskan Region's Logistics Division completed the RFO. The announcement was made on the internet March 22, 1999. The RFO will close April 26, 1999. The Request for Proposals (RFP) for avionics suites will be published in hard copy controlled by the Logistics Division. After an initial bidding period, FAA will accept written proposals for evaluation. An independent team will then select the best apparent offer based on technical qualifications and cost considerations using previously documented objective selection criteria. The number of ground stations allowed to be purchased as a separate line item under the Avionics contract includes a minimum of 12 and maximum of 50 sets if the line item is exercised. The apparent successful vendor will be required to produce at least two sets of installed avionics (in aircraft provided by the manufacturer), a ground station, and related software to demonstrate operation of the proposed avionics system, in flight, at Bethel, Alaska in July 1999. Following a successful demonstration, the decision to order ground stations from the Avionics vendor will be made. The Avionics RFP will include a delivery line item for data link ground stations compatible with the avionics. FAA may procure all necessary units from the vendor, or purchase some or all from another source, with cost being the primary consideration. Additional units beyond the 12 immediately required may be procured from the vendor if it is determined advantageous to FAA and if funds become available.

D. Down select prospective vendor. 3rd Quarter FY99 - Completed

UPS Aviation Technologies (formerly II Morrow, Inc), an Oregon based subsidiary of United Parcel Service was down selected. UPS AT will be required to produce at least two sets of installed avionics (in aircraft provided by UPS AT), a ground station, and related software to demonstrate operation of the proposed avionics system, in flight, at Bethel, Alaska in August 1999. Following a successful flight demonstration, a production contract will be awarded. FAA may procure all necessary units from the vendor, or purchase some or all from another source, with cost being the primary consideration. Additional units beyond the 12 immediately required may be procured if it is determined advantageous to FAA and if funds become available.

Obtain and Install Ground Infrastructure to Support ADS-B - cont.

Progress/Outcomes - cont.

E. Conduct initial operational capability demonstration. 4th Quarter FY99 - Completed

An initial operational capability demonstration was completed on August 25, 1999. UPS AT, using a company-owned Beechcraft King Air airplane and a specially equipped Cessna Model 208 Caravan furnished by PenAir, UPS AT, demonstrated that its proposed ground station system would meet FAA performance specifications for the Capstone Program.

F. Award contract. 4th Quarter FY99 - Completed

After analyzing the data from the initial operational capability demonstration a determination was made that FAA specifications were met and a contract for the ground stations was awarded on September 13th

G. Install ground stations. 3rd Quarter FY01 - In Progress

Site visits at King Salmon and Dillingham are complete and the “as-builts” for Aniak and Romanzof are also done. UPSAT changes to implement RMM are in the review stage. The site visits for Unakleet, Sparravohn and Tatalina are being scheduled. St Marys and Aniak sites are now operational.

3. Micro-EARTS Adaptation

Objective	Purpose
Adapt the Micro-EARTS at the Anchorage ARTCC to receive and process ADS-B position reports and fuse radar targets for display to air traffic controllers and pilots.	To allow pilots of Capstone-equipped aircraft to see radar targets for all nearby aircraft as well as ADS-B equipped aircraft position reports and radar targets via Traffic Information Service-Broadcast (TIS-B) for all nearby traffic on their multiple function display (MFD). The Micro-EARTS at the Anchorage ARTCC is being adapted to receive and process ADS-B position reports and fuse radar targets for display to air traffic controllers and pilots.
<p style="text-align: center;">Progress/Outcomes</p> <p>A. Procure and install modification to Micro-EARTS. <u>3rd Quarter FY99 -Completed</u></p> <p>Lockheed-Martin Corporation representatives installed the Capstone Micro-EARTS modification during April in preparation of the Beta-demonstration.</p> <p>B. Conduct Beta Demonstration. <u>3rd Quarter FY99 -Completed</u></p> <p>The modification was successfully demonstrated during the week of April 19 and again on May 18-19. Radar targets were fused with ADS position reports and displayed on remote displays. Following testing, this capability is expected to reach Operational Readiness Demonstration by August 2000.</p> <p>C. Design Reviews. <u>3rd Quarter FY00 - Completed</u></p> <p>Design reviews were completed by AOS in May 2000. Software was delivered and installed in the Anchorage ARTCC in June.</p>	

D. Certification. 3rd Quarter FY01 - In Progress

The capability to provide TIS-B services in a dispatcher flight-monitoring mode has not been resolved due to a number of issues. There is ongoing discussion if this capability can be provided through either the operational or developmental MEARTS and what additional hardware and software changes are required to accomplish this, much of which is unfunded at this time.

4. Coordinate/Obtain/Implement Flight Information Services (FIS)

Objective	Purpose
To work in conjunction with AND-700 to obtain and field FIS.	There is a significant amount of data in the National Airspace System that, if the pilot could have access to it in the cockpit, would make the flight safer through improved situational awareness (e.g., weather information) or more cost effective (e.g., knowledge of special use airspace restrictions). Without this information the pilot faces uncertain weather hazards and other operational inefficiencies. Capstone will use the Flight Information System (FIS) to receive current and forecasted weather and weather-related information as well as the status of SUAs. The enhanced weather products will be available to pilots and controllers, allowing them to share the same situational awareness. The information will be displayed graphically to the pilot. Expected benefits: increased availability of flight services, increased timeliness and quality of data on weather and system status, increased access to airspace, and reduced flight times and distance.
<p style="text-align: center;">Progress/Outcomes</p> <p>A. National contractor selection. <u>4th Quarter FY99 - Completed</u></p> <p>On July 28, 1999 ARNAV Systems, Incorporated and NavRadio Corporation were selected as the national Flight Information Services Data Link (FISDL) service providers by headquarters. We will be examining the products and services offered by these vendors to determine which might be suitable for the commercial operators in the Capstone service area</p> <p>B. Select Contractor. <u>4th Quarter FY00 – Completed</u></p> <p>FIS installed at the Anchorage ZAN and is operational on the developmental system at Bethel and Anchorage.</p>	

5. Train Capstone Participants

Objective	Purpose
To ensure all participants in the Capstone program are properly trained on the Capstone avionics.	To ensure the Capstone avionics equipment is utilized properly and to the fullest to achieve the greatest benefit to enhanced safety and operational capabilities all participants must be trained.
<p style="text-align: center;">Progress/Outcomes</p> <p>A. Complete the statement of work. <u>3rd Quarter FY99 - Completed</u></p> <p>The contracting officer has issued the package to UAA and received their response. It is anticipated that the contract will be awarded during the FY99 fourth quarter.</p> <p>B. Issue contract. <u>4th Quarter FY99 – Completed</u></p> <p>The University of Alaska has been awarded a contract to deliver a pilot training program for the Capstone equipment and to conduct Capstone participant training.</p> <p>C. Conduct training. <u>3rd Quarter FY01 - In Progress</u></p> <p>UAA continues to be very active in Capstone in a number of areas. The Cessna 180 continues to provide Capstone demonstrations and evaluations on a regular basis allowing the various FAA administrators to gain firsthand experience with an active Capstone display. Training for capstone participants continue to be very active with ERA aviation participating and they have completed Initial Capstone training with UAA and are continuing to train in house. The amount of Initial and Recurrent training being accomplished by the operators has kept the Capstone simulators fully occupied.</p>	

6. Obtain and Install Automated Weather Equipment

Objective	Purpose
To obtain and install Automated Weather Observing Equipment at up to 10 sites in the Capstone area.	To assist in providing weather information to accomplish IFR enroute and landings at Capstone area airports and to enable the use of the, up to eighteen, new GPS approaches requires current weather information be available. The weather observation equipment will meet at least the minimum functionality required by the Federal Aviation Regulations to support an instrument approach procedure for commercial operators. Weather sensors will provide the following observations: (a) wind speed, direction, and gusts; (b) altimeter setting; (c) temperature and dew point; (d) cloud height and sky cover; and (e) visibility. The equipment will provide an automatic radio broadcast of observations and have the capability to provide remote weather observations via a telephone line or connection to Service A.
<p style="text-align: center;">Progress/Outcomes</p> <p>A. Select prospective sites: <u>1st Quarter FY99 - Completed</u></p> <p>The Industry Council has selected the following ten (10) villages as prospective sites for installation of automated weather equipment; Kipnuk, Platinum, Scammon Bay, Holy Cross, Kwigillingok, Kalskag, Mountain Village, Russian Mission, St. Michael, and Koliganek.</p> <p>B. Perform site surveys: <u>2nd Quarter FY00 - Completed</u></p> <p>ANI 700 has completed the last three survey sites.</p> <p>C. Procure the automated weather equipment. <u>3rd Quarter FY99 - Completed</u></p> <p>The 10 plastic equipment shelters were purchased and shipped to Anchorage for retrofitting. Ten AWOS III facilities were purchased from Qualimetrics, Inc. The first item arrived and is being installed in a prototype facility being constructed at the ANI Anchorage Complex.</p> <p>D. Install Automated Weather Equipment – cont. <u>3rd Quarter FY01 - In Progress</u></p> <p>With the JAI of the Platinum AWOS in late June, 9 of the original 10 AWOS sites are completed. The remaining site, Pilot Point (substituted for Kwigillingok) has telco issues still being worked.</p>	

7. Conduct Safety and Human Factors Study

Objective	Purpose
To accomplish independent documentation, measurement, and reporting of the Capstone project.	A major “Capstone” objective is to improve safety in Alaska while offering efficiencies to operators. Key to the Capstones program’s overall success is the need conduct an independent evaluation of system safety improvements and to document the user benefits.
<p style="text-align: center;">Progress/Outcomes</p> <p>A. Complete the statement of work and issue contract. <u>3rd Quarter FY99 - Completed</u></p> <p>The contracting officer has issued the package to UAA and received their response. It is anticipated that the contract will be led during the FY99 fourth quarter.</p> <p>B. Issue contract. <u>4th Quarter FY99 - Completed</u></p> <p>The University of Alaska has been contracted to conduct an independent analysis of safety improvements related to the Capstone program.</p> <p>C. Conduct Study. <u>3rd Quarter FY01 - In Progress</u></p> <p>Jason Segar as a student intern working on the Capstone project and has now gathered and entered 3600 sets of tower data on Special VFR operations to provide a base from which to measure the effect of ADS-B on traffic movement in the Capstone area. Wayne Daniels has been working with ISER in the developing a questionnaire to be used in the collection of data from operators and pilots in the upcoming joint NIOSH/ISER survey. This will provide data for Capstone II (SE) and follow on data from the baseline for Capstone effectiveness in the Y-K delta area. OMB approval has now been received for this data collection effort.</p>	